

What is claimed is:

1. An aptazyme construct comprising a regulatable Group I intron aptamer oligonucleotide sequence having a regulatory domain, wherein the kinetic parameters of the aptazyme on a target gene vary in response to the interaction of an allosteric effector molecule with the regulatory domain.
2. The aptazyme construct of claim 1, wherein the aptamer comprises RNA.
3. The aptazyme construct of claim 1, wherein the aptamer comprises DNA.
4. The aptazyme construct of claim 1, wherein the aptazyme is at least partially single stranded.
5. The aptazyme of construct claim 1, wherein the aptazyme is at least partially double stranded.
6. The aptazyme of construct claim 1, wherein the construct comprises the oligonucleotide sequence of

SEQ ID NO:1: TAA TCT TAC CCC GGA ATT ATA TCC AGC TGC ATG
TCA CCA TGC AGA GCA GAC TAT ATC TCC AAC TTG TTA AAG CAA
GTT GTC TAT CGT TTC GAG TCA CTT GAC CCT ACT CCC CAA AGG
GAT AGT CGT TAG or an oligonucleotide sequence that
hybridizes under stringent conditions to a hybridization
probe the nucleotide sequence of which comprises the
sequence of SEQ ID NO:1 or an oligonucleotide that is
complementary or antisense to such a probe.

7. The aptazyme of construct claim 1, wherein the construct
comprises the oligonucleotide sequence of SEQ ID NO:2:
GCC TGA GTA TAA GGT GAC TTA TAC TTG TAA TCT ATC TAA ACG
GGG AAC CTC TCT AGT AGA CAA TCC CGT GCT AAA TTA TAC CAG
CAT CGT CTT GAT GCC CTT GGC AGA TAA ATG CCT AAC GAC TAT
CCC TT or an oligonucleotide sequence that hybridizes
under stringent conditions to a hybridization probe the
nucleotide sequence of which comprises the sequence of
SEQ ID NO:2 or an oligonucleotide that is complementary
or antisense to such a probe.

8. The aptazyme construct of claim 1, wherein the construct
comprises the oligonucleotide sequence of SEQ ID NO:3:
GAT AAT ACG ACT CAC TAT AGG GAT CAA CGC TCA GTA GAT GTT

TTC TTG GGT TAA TTG AGG CCT GAG TAT AAG GTG or an oligonucleotide sequence that hybridizes under stringent conditions to a hybridization probe the nucleotide sequence of which comprises the sequence of SEQ ID NO:3 or an oligonucleotide that is complementary or antisense to such a probe.

9. The aptazyme construct of claim 1, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO:4:
CTT AGC TAC AAT ATG AAC TAA CGT AGC ATA TGA CGC AAT ATT
AAA CGG TAG CAT TAT GTT CAG ATA AGG TCG TTA ATC TTA CCC
CGG AA or an oligonucleotide sequence that hybridizes under stringent conditions to a hybridization probe the nucleotide sequence of which comprises the sequence of SEQ ID NO:4 or an oligonucleotide that is complementary or antisense to such a probe.

10. The aptazyme construct of claim 1, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO:5:
GCC TGA GTA TAA GGT GAC TTA TAC TAG TAA TCT ATC TAA ACG
GGG AAC CTC TCT AGT AGA CAA TCC CGT GCT AAA TN(1-4)A TAC
CAG CAT CGT CTT GAT GCC CTT GGC AGN(1-4) TAA ATG CCT AAC
GAC TAT CCC TT or an oligonucleotide sequence that

hybridizes under stringent conditions to a hybridization probe the nucleotide sequence of which comprises the sequence of SEQ ID NO:5 or an oligonucleotide that is complementary or antisense to such a probe.

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11. The aptazyme construct of claim 1, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO: 6:
CTT AGC TAC AAT ATG AAC TAA CGT AGC ATA TGA CGC AAT ATT
AAA CGG TAG TAT TAT GTT CAG ATA AGG TCG TTA ATC TTA CCC
CGG AAT TCT ATC CAG CT or an oligonucleotide sequence that hybridizes under stringent conditions to a hybridization probe the nucleotide sequence of which comprises the sequence of SEQ ID NO:6 or an oligonucleotide that is complementary or antisense to such a probe.

12. The aptazyme construct of claim 1, wherein the effector molecule is endogenous.

13. The aptazyme construct of claim 1, wherein the effector molecule is exogenous.

14. The aptazyme construct of claim 1, wherein the effector molecule comprises theophylline.

5 15. An aptazyme construct comprising a regulatable Group I intron aptamer oligonucleotide having an allosterically regulatable regulatory domain, wherein the kinetic parameters of the aptazyme on a target gene vary in response to the interaction of an allosteric effector molecule with the regulatory domain and the intron splicing reaction occurs in vitro.

16. The aptazyme construct of claim 15, wherein the aptamer comprises RNA.

17. The aptazyme construct of claim 15, wherein the aptamer comprises DNA.

18. The aptazyme construct of claim 15, wherein the aptazyme is at least partially single stranded.

20 19. The aptazyme of construct claim 15, wherein the aptazyme is at least partially double stranded.

20. The aptazyme of construct claim 15, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO:1:
TAA TCT TAC CCC GGA ATT ATA TCC AGC TGC ATG TCA CCA TGC
AGA GCA GAC TAT ATC TCC AAC TTG TTA AAG CAA GTT GTC TAT
CGT TTC GAG TCA CTT GAC CCT ACT CCC CAA AGG GAT AGT CGT
TAG or an oligonucleotide sequence that hybridizes under
stringent conditions to a hybridization probe the
nucleotide sequence of which comprises the sequence of
SEQ ID NO:1 or an oligonucleotide that is complementary
or antisense to such a probe.

21. The aptazyme of construct claim 15, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO:2:
GCC TGA GTA TAA GGT GAC TTA TAC TTG TAA TCT ATC TAA ACG
GGG AAC CTC TCT AGT AGA CAA TCC CGT GCT AAA TTA TAC CAG
CAT CGT CTT GAT GCC CTT GGC AGA TAA ATG CCT AAC GAC TAT
CCC TT or an oligonucleotide sequence that hybridizes
under stringent conditions to a hybridization probe the
nucleotide sequence of which comprises the sequence of
SEQ ID NO:2 or an oligonucleotide that is complementary
or antisense to such a probe.

22. The aptazyme construct of claim 15, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO:3: GAT AAT ACG ACT CAC TAT AGG GAT CAA CGC TCA GTA GAT GTT TTC TTG GGT TAA TTG AGG CCT GAG TAT AAG GTG or an oligonucleotide sequence that hybridizes under stringent conditions to a hybridization probe the nucleotide sequence of which comprises the sequence of SEQ ID NO:3 or an oligonucleotide that is complementary or antisense to such a probe.

23. The aptazyme construct of claim 15, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO:4: CTT AGC TAC AAT ATG AAC TAA CGT AGC ATA TGA CGC AAT ATT AAA CGG TAG CAT TAT GTT CAG ATA AGG TCG TTA ATC TTA CCC CGG AA or an oligonucleotide sequence that hybridizes under stringent conditions to a hybridization probe the nucleotide sequence of which comprises the sequence of SEQ ID NO:4 or an oligonucleotide that is complementary or antisense to such a probe.

24. The aptazyme construct of claim 15, wherein the construct comprises the oligonucleotide sequence of SEQ ID NO:5: GCC TGA GTA TAA GGT GAC TTA TAC TAG TAA TCT ATC TAA ACG

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GGG AAC CTC TCT AGT AGA CAA TCC CGT GCT AAA TN(1-4)A TAC
CAG CAT CGT CTT GAT GCC CTT GGC AGN(1-4) TAA ATG CCT AAC
GAC TAT CCC TT or an oligonucleotide sequence that
hybridizes under stringent conditions to a hybridization
probe the nucleotide sequence of which comprises the
sequence of SEQ ID NO:5 or an oligonucleotide that is
complementary or antisense to such a probe.

25. The aptazyme construct of claim 15, wherein the construct
comprises the oligonucleotide sequence of SEQ ID NO: 6:
CTT AGC TAC AAT ATG AAC TAA CGT AGC ATA TGA CGC AAT ATT
AAA CGG TAG TAT TAT GTT CAG ATA AGG TCG TTA ATC TTA CCC
CGG AAT TCT ATC CAG CT or an oligonucleotide sequence
that hybridizes under stringent conditions to a
hybridization probe the nucleotide sequence of which
comprises the sequence of SEQ ID NO:6 or an
oligonucleotide that is complementary or antisense to
such a probe.

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26. The aptazyme construct of claim 15, wherein the effector
molecule is endogenous.

27. The aptazyme construct of claim 15, wherein the effector molecule is exogenous.

28. The aptazyme construct of claim 15, wherein the effector molecule comprises theophylline.

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